Cisco Nexus 9000 Series NX-OS IP Fabric for Media Release Notes,

Release 10.4(1)F

Introduction

This document describes the Cisco IP fabric for media solution, new hardware, software features, upgrade instructions, and caveats for Cisco NX-OS Release 10.4(1)F software for use on the following:

- N9K-C9332D-H2R
- N9K-C9348GC-FX3
- N9K-C9804
- N9K-X98900CD-A

Table 1. Online History Change:

Date	Description
August 18, 2023	Cisco NX-OS Release 10.4(1)F became available

IP Fabric for Media

Today, the broadcast industry uses a serial digital interface (SDI) router and SDI cables to transport video and audio traffic. The SDI cables can carry only a single unidirectional signal. As a result, many cables, frequently stretched over long distances, are required, making it difficult and time-consuming to expand or change an SDI-based infrastructure.

Cisco's IP fabric for media solution helps transition from an SDI router to an IP-based infrastructure. In an IP-based infrastructure, a single cable can carry multiple bidirectional traffic flows and can support different flow sizes without requiring changes to the physical infrastructure. The solution uses Cisco Nexus 9000 Series switches in conjunction with the Cisco non-blocking multicast (NBM) algorithm (an intelligent traffic management algorithm) and with or without the Cisco Nexus Dashboard Fabric Controller (NDFC) IP for Media Fabric (IPFM) to provide a highly reliable (zero drop multicast), highly visible, highly secure, and highly available network.

Cisco Nexus 9000 Series NX-OS IP Fabric for Media solution supports the following types of deployments:

- Spine-leaf topology—A single or multi-spine deployment method with variable flow size that allows the NBM fabric to form a multicast flow.
- Single modular switch—An architecture suitable for fixed deployments, with the controller providing features such as flow visibility, security, and monitoring.

New Hardware Features

The following new hardware are introduced in Cisco NX-OS Release 10.4(1)F for deployment in IP Fabric for Media solution:

- N9K-C9332D-H2R - This is a Top of Rack (TOR) L2/L3 switch with 32 QSFP-DD, 2 X SFP, and ports on the front panel. The QSFP-DD can be used for 400G operation. It has 6 stacked fan modules.
- N9K-C9348GC-FX3 – This is a TOR L2/L3 switch with 48 1GBase-T (copper ports), 4x SFP28 and 2x QSFP28 ports.
- N9K-C9804 – This is a Nexus 9800 chassis fabric module. It has 4 line card slots.

- N9K-X98900CD-A – A line card is supported on Cisco Nexus 9808 and 9804 platform switches.

Supported Device Hardware

Table 2 lists the hardware that the Cisco Nexus 9000 Series NX-OS IP Fabric for Media Release 10.4(1)F supports. For additional information about the supported hardware, see the Hardware Installation Guide for your Cisco Nexus 9000 Series device.

Table 2. Cisco Nexus 9000 Series Hardware

Product ID	Hardware Description	Role in Topology
N9K-C93108TC-EX	Cisco Nexus 93108TC-EX 1-RU switch with 48 10GBASE-T ports and 6 40/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93180YC-EX	Cisco Nexus 93180YC-EX 1-RU switch with 48 10/25-Gigabit Ethernet ports and 6 40/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93108TC-FX	Cisco Nexus 93108TC-FX 1-RU Top-of-Rack switch with 48 10GBASE-T (copper) ports and 6 40/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93180YC-FX	Cisco Nexus 93180YC-FX 1-RU Top-of-Rack switch with 48 10/25-Gigabit SFP28 ports and 6 40/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C9348GC-FX3	Cisco Nexus C9348GC-FX3 is RU switch with 48 1GBase-T (copper ports), 4x SFP28 and 2x QSFP28 ports.	Leaf switch in spine-leaf topology
N9K-C9348GC-FXP	Cisco Nexus 9348GC-FXP switch with 48 100M/1GBASE-T (copper) ports, 4 10/25-Gigabit SFP28 ports, and 2 40/100-Gigabit QSFP ports	Leaf switch in spine-leaf topology
N9K-C93180YC-FX3S	Cisco Nexus 93180YC-FX3S 1-RU Top-of-Rack switch with 48 25/50/100-Gigabit Ethernet SFP28 ports and 6 10/25/40/50/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93180YC-FX3	Cisco Nexus 93180YC-FX3 1-RU Top-of-Rack switch with 48 25/50/100-Gigabit Ethernet SFP28 ports and 6 10/25/40/50/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93180YC-FX3P	Cisco Nexus 93108TC-FX3P 1-RU Top-of-Rack switch with 48 10GBASE-T (copper) ports and 6 40/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93216TC-FX2	Cisco Nexus 93216TC-FX2 2-RU switch with 96 100M/1G/10G RJ45 ports and 12 40/100-Gigabit QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93360YC-FX2	Cisco Nexus 93360YC-FX2 2-RU switch with 96 10/25-Gigabit SFP+ ports and 12 40/10-Gigabit Ethernet QSFP28 ports	Leaf switch in spine-leaf topology
N9K-C93240YC-FX2	Cisco Nexus 93240YC-FX2 1.2-RU Top-of-Rack switch with 48 10/25-Gigabit SFP28 fiber ports	Spine or leaf switch in spine-leaf

Product ID	Hardware Description	Role in Topology
	and 12 40/100-Gigabit Ethernet QSFP28 ports	topology
N9K-C9336C-FX2	Cisco Nexus 9336C-FX2 1-RU switch with 36 40/100-Gigabit Ethernet QSFP28 ports	Spine or leaf switch in spine-leaf topology
N9K-C9336C-FX2-E	Cisco Nexus 9336C-FX2-E 1-RU switch with 36 40/100-Gigabit Ethernet QSFP28 ports	Spine or leaf switch in spine-leaf topology
N9K-C9364C	Cisco Nexus 9364C 2-RU Top-of-Rack switch with 64 40/100-Gigabit QSFP28 ports and 2 1/10-Gigabit SFP+ ports	Spine switch in spine-leaf topology
N9K-C9316D-GX	Cisco Nexus 9316D 1RU switch with 16 fixed 40/100/400G QSFP-DD ports	Spine switch in spine-leaf topology
N9K-C93600CD-GX	Cisco Nexus 93600CD-GX 1RU switch with 28 fixed 40/100G QSFP-28 ports and 8 fixed 40/100/400G QSFP-DD ports	Spine or leaf switch in spine-leaf topology
N9K-C9364C-GX	Cisco Nexus 9364C-GX 2RU switch with 64 fixed 40/100G QSFP-28 ports	Spine or leaf switch in spine-leaf topology
N9K-C9364D-GX2A	Cisco Nexus 9364D-GX2A is a 2-Rack-Unit (2RU) switch with 64 fixed 40/100/400G QSFP-DD ports and two fixed 1/10G SFP+ ports	Spine or leaf switch in spine-leaf topology
N9K-C9348D-GX2A	Cisco Nexus 9348D-GX2A is a 2-Rack-Unit (2RU) switch with 48 fixed 40/100/400G QSFP-DD ports and two fixed 1/10G SFP+ ports	Spine or leaf switch in spine-leaf topology
N9K-C9332D-GX2B	Cisco Nexus 9332D-GX2B is a compact form-factor 1-Rack-Unit (1RU) switch with 32 fixed 40/100/400G QSFP-DD ports and two fixed 1/10G SFP+ ports	Spine or leaf switch in spine-leaf topology
N9K-C9332D-H2R	Cisco Nexus 9332D-H2R is a TOR switch with 32 QSFP-DD ports and two fixed SFP ports	Leaf switch in spine-leaf topology
Cisco Nexus 9504 or 9508 switch with the following line cards: N9K-X9636C-R N9K-X9636C-RX N9K-X9636Q-R	Cisco Nexus 9504 4-slot or 9508 8-slot switches N9K-X9636C-R: 36-port 40/100-Gigabit Ethernet QSFP28 line card N9K-X9636C-RX: 36-port 40/100-Gigabit Ethernet QSFP28 line card N9K-X9636Q-R: 36-port 40-Gigabit Ethernet QSFP+ line card	Spine in spine-leaf topology or single modular switch
N9K-X9624D-R2 N9K-C9508-FM-R2	N9K-X9624D-R2 Line card with 24 400G QSFP-DD ports (only to be used with 8-slot chassis) N9K-C9508-FM-R2 Fabric module for 400G line card (only to be used with 8-slot chassis)	Spine in spine-leaf topology or single modular switch
Cisco Nexus 9804 and 9808 switch with the following line	Cisco Nexus 9804 4-slot or Nexus 9808 8-slot modular switch	Spine in spine-leaf topology or single modular switch

Product ID	Hardware Description	Role in Topology
cards: N9K-X98900CD-A N9K-X9836DM-A	 N9K-X98900CD-A line card with 34 100G QSFP28 and 14 QSFP-DD ports N9K-X9836DM-A Line card with 36 40/100/400G QSFP-DD ports	
Cisco Nexus 9408 switch with the following expansion modules: N9K-X9400-8D N9K-X9400-16W	Cisco Nexus 9408 is centralized modular switch with 8 line-card expansion modules (LEMs) N9K-X9400-8D: Nexus 9400 8p 400G QSFP-DD LEM N9K-X9400-16W: Nexus 9400 16p 200G LEM	Spine in spine-leaf topology or single modular switch

New and Enhanced Features

The following features are enhanced for Cisco Nexus 9000 Series NX-OS IP Fabric for Media Release 10.4(1)F:

Feature	Description
ISIS support with NBM	ISIS is supported with NBM.

Open Issues

There are no open issues in Cisco Nexus 9000 Series NX-OS IP Fabric for Media Release 10.4(1)F.

Resolved Issues

There are no resolved issues in Cisco Nexus 9000 Series NX-OS IP Fabric for Media Release 10.4(1)F.

Upgrade Instructions

Note: With IFPM, ISSU is not supported, and upgrade will be disruptive.

Note: The default upgrade process is disruptive. Non-disruptive ISSU is not supported with feature nbm enabled.

Follow these steps to upgrade from a Cisco NX-OS 7.x or 9.x release to Cisco NX-OS Release 10.4(1)F in an IP fabric for media deployment.

Note: For Cisco Nexus N9K-C9332D-H2R and N9K-C9348GC-FX3 switches with -R line cards, you must upgrade from Cisco NX-OS Release 7.0(3)F3(4) to a 10.x release.

1. Shut down the endpoint-facing ports on the switches.
2. Disable NBM (using the no feature nbm command).

3. Disable the ip pim pre-build-spt force command on the spine switches in your fabric.
4. Disable PIM passive mode (using the no ip pim passive command).
5. Upgrade the switch software from 7.x or 9.x to 10.4(x).
6. For Cisco Nexus N9K-C9332D-H2R and N9K-C9348GC-FX3 switches with -R line cards, configure these TCAM carving commands in the following order and then reload the switch:

   ```
   hardware access-list tcam region redirect_v6 0
   hardware access-list tcam region ing-nbm 2048
   ```

7. Upgrade NDFC.
8. Configure PIM and MSDP, if applicable.
9. Enable NBM (using the feature nbm command).
10. Configure NBM policies using the CLI or NDFC. (See the Cisco Nexus 9000 Series IP Fabric for Media Solution Guide, Release 10.4(x).)
11. If you're not using NDFC, disable IGMP static OIF and create an NBM flow definition to establish a flow.
12. Re-enable all ports facing the endpoints.
13. On configuring " feature nbm" , DEFAULT VRF will not come in any PMN mode (pim-active/passive). You must configure it explicitly using the command " nbm mode pim-active" /" nbm mode pim-passive" under Default VRF.
14. On configuring NBM non-default VRF using " nbm vrf <foo>" , NON-DEFAULT VRF will not come in any PMN mode (pim-active/passive). You must configure it explicitly using command " nbm mode pim-active" /" nbm mode pim-passive" under Non-Default VRF.

Limitations

Sub interfaces should be in the same nbm VRF mode as its parent interface. They (Parent port and its sub interfaces) can be in either nbm pim-active or nbm pim-passive mode.

For example: If the parent port is part of NBM VRF which is in PIM active mode, its subinterfaces must also be in the VRF (can be different VRF context) with the same PIM active mode.

Related Documentation

- *Cisco Nexus 9000 Series IP Fabric for Media Solution Guide, Release 10.4(x)*
- *Cisco Nexus 9000 Series NX-OS Release Notes, Release 10.4(x)*
- *Cisco Nexus 9000 Series NX-OS Verified Scalability Guide, Release 10.4(x)*
- *Cisco Nexus 3000 and 9000 Series NX-API REST SDK User Guide and API Reference*
- *Cisco Nexus 9000 Series NX-OS Software Upgrade and Downgrade Guide, Release 10.4(x)*
- *Cisco NDFC-Fabric Controller Configuration Guide, Release 12.1.x*
- *Cisco NDFC Installation Guide, Release 12.1.x*

- *The entire Cisco Nexus 9000 Series NX-OS documentation set is available at the following URL:* http://www.cisco.com/c/en/us/support/switches/nexus-9000-series-switches/tsd-products-support-series-home.html

Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to nexus9k-docfeedback@cisco.com. We appreciate your feedback.

Legal Information